

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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C-O-N-F-I-D-E-N-T-I-A-L

COUNTRY USSR

REPORT

SUBJECT

1. Diesel Engine Plant in Riga, Latvian SSR
2. Metal Plant in Artemovsk, Ukrainian SSR
3. Borets Petroleum Machinery Production Plant in Moscow

DATE DISTR.

Sept 8, 1959

NO. PAGES

2

REFERENCES

DATE OF INFO.

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PLACE & DATE ACQ.

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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

Attachment 1: [] report on the Diesel Engine Plant in Riga from 1951 to 1956. Construction of the plant began in 1951, and until 1956 it failed to achieve its production norm, allegedly because of poor organization. The norm in 1956 was 150 CH-2 (two-cylinder, four-cycle, 22-horsepower) and 70 CH-4 (four-cylinder, four-cycle, 40-horsepower) diesel engines per month. The report describes the components of the engines and plant security, power arrangements, and installations. Attached to the report is a sketch showing the plant layout, with legend for same.

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[] Attached to the report is a sketch of the general layout of the metal plant.

Attachment 3: [] report on the Borets Petroleum Machinery Production Plant in Moscow from April through September 1956. Located at Skladochnaya ulitsa, Dzerzhinskiy rayon, the plant employed about 2000 persons in the production of pumps, compressors, and other equipment for the Soviet petroleum industry. In the report one of the pumps is described and sketched in some detail.

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Att. 1

DIESEL ENGINE PLANT IN RIGA

1. The Diesel Engine Plant (Dizelnostroitelnyy Zavod) was located at 40 Ganibu Dambis Street, Stalinskiy rayon. in Riga (N 56-57. E 24-05).

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It was subordinate to the Ministry of Nonferrous Metallurgy. The north and east sides of the plant were bounded by a canal called Sarkana Daugaba in Latvian, and Krasnaya Dvina in Russian. On the south side was the Bolshevichka Textile Mill and on the west, Ganibu Dambis Street. the northern part of the area occupied by the plant belonged to a textile dye mill or to a chemical plant.

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2. The Diesel Engine Plant occupied an area of about 500 x 400 meters, surrounded by a two-meter-high rubblework wall and topped by 0.50-meter-high wire fencing. There were no restricted or subterranean buildings. Construction of the plant was begun in 1951. There were plans to build two more buildings, the basement foundations of which were begun in 1956. The plant layout is shown on the sketch on page 9 .

Production

3. The plant produced only diesel engines, trademarked RDZ (Rizhkiy Dizel-nostroitelnyy Zavod), of two types: CH-2 with two cylinders, four cycles, and 22 horsepower; and CH-4 with four cylinders, four cycles, and 40 horsepower.

Most of the plant production was sent to the Soviet Army. the engines were used for electric generating units to power military equipment; the production figures only for 1956 which were 150 CH-2 and 70 CH-4 engines per month. These figures corresponded exactly to the norm. Before 1956, the plant had not achieved the production norm because of poor organization.

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4. Visible efforts were made to increase production. these efforts were directed toward the improvement of production organization and the introduction of new work methods. Improvements usually stemmed from the workers' initiative to increase their earnings through greater production. However, when production increased, the quality of the work usually declined. Personnel and machinery remained almost exactly the same since the plant began production in 1951.

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5. the following materials and equipment were used, They were delivered to the plant in three five-ton GAZ trucks.

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- a. Injection pumps for two and four cylinders. The injectors were delivered separately and were sealed. The production plant was not responsible for any defects which the injectors might have if they carried these seals. The injectors were fitted to the pumps in the Diesel Engine Plant.
- b. Dynamos and storage batteries of approximately 24 volts.
- c. Cables, fuses, ammeters, and other electrical accessories.
- d. Rough forged crankshafts.

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Att. E.

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- e. Crankcases, engine blocks, and cylinder heads which came from the neighboring Riga Electric Motor Plant (REZ).
 - f. Injection-cast aluminum pistons.
 - g. Coal, used for heating and for forging. Peat bricks were also used for heating.
 - h. Steel and brass sheets.
 - i. Water refrigeration and oil pumps.
 - j. Circular, square, or hexagonal steel bars.
 - k. Steel and brass tubes.
 - l. Wood for packing crates, foundry molds, and other wooden materials.
 - m. Bushings.
6. The production shops, which included the machine, preparation and fitting, stamping, and galvanizing shops, sent their products to the warehouses. From there they were sent as needed to the assembly shop. The engines were assembled on conveyor belt.

Organization and Personnel

7. the plant's organization.

- a. One shop chief, an engineer
- b. One assistant, an engineer
- c. One shop engineer in charge of production
- d. One machine technician
- e. Six brigades of assembly fitters
- f. Three laborers
- g. One cleaning woman
- h. One Party and one Komsomol secretary
- i. One labor union representative
- j. One accountant
- k. One typist
- l. One economic engineer who was concerned with the cost of materials and with the cost and control of production.
- m. One personnel chief
- n. Two persons in charge of having the necessary production and raw materials sent from the warehouse to the assembly shop.

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8. Plant personnel included 150 office employees and 700 specialized workers. Source did not remember the names of plant personnel.
9. Most of the plant shops observed three eight-hour shifts. Personnel worked every day of the year except Sundays and the following holidays: 1 January, 1 and 2 May, 7 and 8 November. Vacations were staggered throughout the entire year. The average monthly wage for the workers was about 900 rubles. The sanitary conditions were good and were supervised by a plant physician. The installations were spacious and well ventilated. An engineer was charged with making and enforcing safety regulations.

Security

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10. The plant employed 20 guards in three shifts armed with German rifles and revolvers; they were older men and women

At night they kept watch in four sentry boxes around the plant; during the day they guarded the entrance and made the rounds of the plant. The chief guard gave each employee a pass which he had to show at the door upon entering or leaving the plant. There was free access to all parts of the plant.

11. The fire department consisted of ten persons and was equipped with a small car and several fire extinguishers. In each shop were fire extinguishers, hoses, picks, and axes, and some workers trained in fire fighting. any precautions against aerial attacks, nor were there any basements which could be used as shelters.

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Utilities

12. Water was supplied to the plant from the city water system. that electric power was furnished by the Kegums (N 56-44, E 24-43) hydro-electric power station. The plant had a small power transformer

A voltage of 380 was used to operate the machinery and a voltage of 220 for illumination.

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Plant's Installations

13. Following is a description of the various plant installations:

- a. Main plant building, a three-story, brick and cement structure, 120 x 40 x 15 meters in size with no basement. The iron roof frame was supported by four rows of cement columns. The roof was constructed of cement slabs, coated with pitch, and had a large central skylight. On the first floor were the general warehouses, the machine shop, the assembly shop, test laboratories, and the packing department. The second and third floors contained the repair and adjustment shop, the stamping shop, the galvanizing and polishing shop, the machine repair shop, and the electrician's shop. The general warehouses occupied approximately half of the first floor and were used to store about a month's supply of the accessories and parts for the engines, particularly those parts which came from other plants. The parts used in the various shops in the main building were also stored in the warehouses until they were needed in the assembly shop.
- b. The machine shop worked and finished all the diesel engine parts which were produced in the plant. The products from this shop were transported by electric car to the warehouse where they were checked upon entering and again upon leaving. This shop employed 600 persons in three shifts.

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[redacted] The shop was equipped with the following new Soviet machinery:

- (1) Forty lathes with the trademark Krasnyy Proletariy, built in Moscow
 - (2) Four milling machines
 - (3) One new machine for assembling crankshafts; the machine resembled a lathe.
 - (4) Two crankpin reconditioners
 - (5) Two cylinder reconditioners
 - (6) Two ten-ton cranes
 - (7) Ten cranes of less than one-ton capacity.
- e. The assembly shop completely assembled the two kinds of diesel engines produced in the plant. The finished engines were transported on electric battery cars to the test laboratory. This shop employed 130 persons on one shift. It was equipped with the following semineew well-maintained Soviet machinery:
- (1) Three drilling machines
 - (2) Two furnaces which burned vegetable oil and were used for heating bearings so that they would fit tightly.
 - (3) One electric welding set
 - (4) Some reconditioners and hand drills
- d. The test laboratory checked every engine produced in the plant. [redacted] the only machinery in the laboratory consisted of some checking and measuring apparatus which was hooked up to the engines and which indicated the compression, number of revolutions, fuel combustion, dynamo charge, temperature, and other functions. The diesel engines to be used by the Army had to function perfectly so were meticulously checked and tested by two master lieutenant engineers. The engines which did not function satisfactorily were returned to the assembly shop and those which were approved were sent to the packing shop on carts or electric platforms. Fifteen testers worked in three shifts.
- e. In the packing shop, the engines and their accessories, such as piston rings, a small gas oil lamp for heating the engine in winter, and a set of wrenches and socket wrenches for dismounting the entire engine, were wrapped in waterproof tar paper and packed in wooden cage-like crates. The engines were screwed to wooden blocks to hold them securely. The crates were nailed shut and transported by three plant trucks to the city rail freight station. The only machinery in the shop was a three- or four-ton crane for loading the engines into the crates. Ten persons worked one shift in this shop.
- f. The preparation and fitting shop produced and adjusted the auxiliary parts of the engines, such as tubing, filters, shut-off valves, fuel pumps, and screws. The parts produced in this shop were sent down to the warehouse on a freight elevator. [redacted] the number of parts which were produced daily or monthly, but this production

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was coordinated with the engine production. This shop employed 130 persons in three shifts. It was equipped with the following semineew well-maintained Soviet machinery

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- (1) Three small stamping presses
 - (2) Six revolving lathes
 - (3) Four drilling machines
 - (4) Fifteen gas welding sets
 - (5) One one-ton crane
 - (6) One power shears
 - (7) One sheet-metal roller for making tubes
- g. The stamping shop produced various kinds of washers, supports for fastening tubes, and guards for the exhaust rings to prevent persons from being burned while the engine was running. The shop was equipped with ten well-maintained Soviet stamping presses. Seventy persons worked two shifts.
- h. The galvanizing and polishing shop polished screws, small crank handles, and engine cylinders with acids.
- i. The machine repair shop, which repaired all the plant production machinery, employed 60 persons in one shift. The shop was equipped with the following well-maintained Soviet machinery:
- (1) Three lathes
 - (2) Two planers
 - (3) One saw
 - (4) Several drills
 - (5) One gas welding set
 - (6) One electric welding set
- j. The electrician's shop wired the new installations and repaired all the plant's electrical equipment. The shop was equipped with some drills and manual machine tools. Twenty persons worked in one shift.
- k. Forge, a one-story, brick and cement building with an iron roof frame and no basement, 20 x 10 x 6 meters in size, which prepared and worked parts which had not been cast and which were to be sent to the machine shop. It employed 12 persons in one shift. The shop was equipped with the following machinery:
- (1) One electric drop hammer
 - (2) Two steam drop hammers
 - (3) Two large ventilators

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1. Carpentry shop, a large one-story brick structure with a wooden roof frame and no basement, which made wooden molds for the foundry, packing crates, and boxes for the sets of tools which accompanied the engines; it also repaired and constructed other wooden items. The molds were transported by truck to the foundry of the neighboring REZ Plant, which built electric machinery. The crates were transported on electric carts to the packing shop. The carpentry shop had 40 employees in one shift. It was equipped with the following well-maintained Soviet machinery:
 - (1) Two circular saws
 - (2) Two planers
 - (3) One vertical drill
 - (4) Three wood-working lathes
- m. Central heating installation, an old brick structure with an iron roof frame, 20 x 10 x 8 meters in size; there was a plan to wreck this building. The only machinery consisted of a boiler with its pressure gauges, water pump, and three or four ventilators. The boiler supplied steam for the presses and hammers and heated the entire plant.
- n. Administration building, an old two-story brick house, 30 x 10 meters in area which employed about 100 persons in one shift.
- o. Personnel office, an old two-story brick house, 20 x 10 meters in area; the first floor was occupied by the personnel office which had a staff of five and a chief; the second floor contained a small fire station and some living quarters for workers.
- p. Restaurant, a two-story brick and cement building, 30 x 20 meters in area.

Legend for Plant Installations

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12. Following is the legend for sketch of plant installations shown on page 9 . The numbers in parentheses are keyed to those on the sketch.
 - (1) Stone and cement bridge over the Krasnaya Dvina(or Sarkana Daugaba) Canal.
 - (2) Krasnaya Dvina Canal fed by the Dvina River. It had no current and was used almost exclusively by the lumber plant for transporting logs.
 - (3) REZ Plant.
 - (4) Ganibu Dambis Street.
 - (5) Tall brick chimney in disuse. it had belonged to a textile dye mill or chemical plant.
 - (6) Central heating installation.
 - (7) Small brick chimney, which was part of the central heating system.
 - (8) Small wooden part belonging to the Diesel Engine Plant.
 - (9) Entrance for vehicles.
 - (10) Entrance for personnel

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- (11) Carpentry shop.
- (12) Forge shop.
- (13) Personnel office, fire station, and workers' residence.
- (14) Power transformer.
- (1) Administration building.
- (16) Restaurant.
- (17) Main plant building which housed the most important shops.
- (18) (19) Large buildings begun in 1956. It was hoped th t their construction would triple production.
- (20) Emergency infirmary.
- (21) Bolshevichka Textile Mill.
 - (a) The only plant building, a large three- or four-story structure.
 - (b) Plant patio.
- (22) Small wooden port, belonging to the textile mill.
- (23) A type of conveyor belt which transferred logs from the Sarkana Daugaba Canal.
- (24) Plant which worked woods and plywoods.

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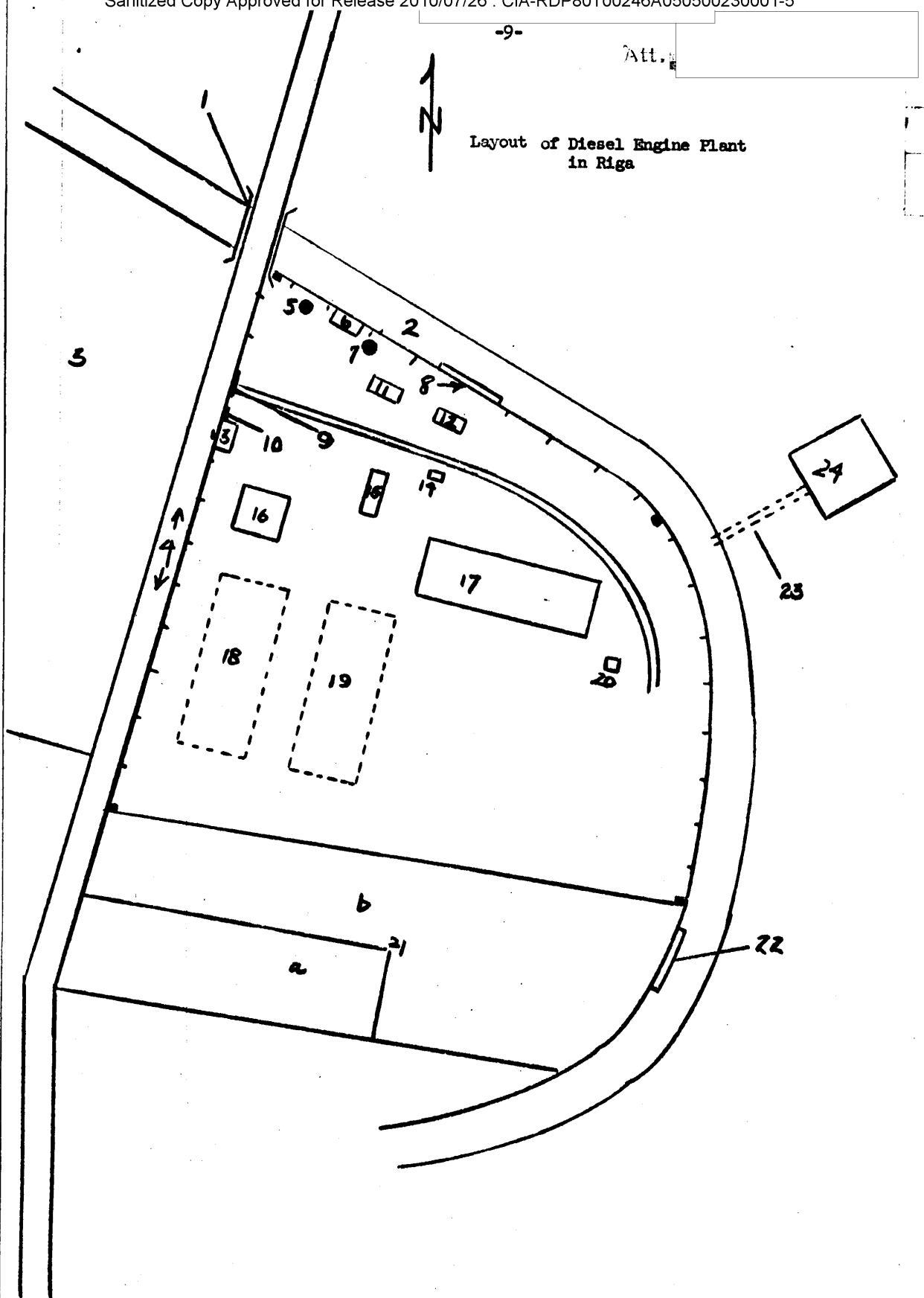
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Att.

Layout of Diesel Engine Plant
in Riga



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Att.

METAL PLANT IN ARTEMOVSK

1. The Metal Plant (Metaliskiy zavod) in Artemovsk (N 48-36, E 38-01) was located about 200 meters beyond the northernmost outskirts of the city; it occupied a 500 x 300 meter area enclosed by a brick fence about two meters high (refer to sketch on page 4 for location and layout of the plant). Construction work on the plant began in September 1950 and was not yet completed as of September 1956; it had no numerical designation. The following items were produced at the plant: hollow copper-colored metal pipes, ranging from one to five meters in length and from five to 60 millimeters in diameter; metal bars of the same dimensions as the pipes; metal plates, 1.50 meters long, .60 meters wide, and from two to five millimeters thick. 50X1-HUM

The plant employed about 1,000 male and female workers but, reportedly, would eventually employ some 10,000. There were no electronic devices in the plant and he did not believe it could be converted to war production. Raw materials, consisting of copper slugs, wood, coal, gasoline and oil, were shipped in via a branch of the Artemovsk-Kramatorsk railroad line; the latter, in turn, connected with the Moscow-Kharkov line. An abundant supply of coal was kept in reserve. 50X1-HUM

2. The plant operated on a three-shift eight-hour schedule every day except Sunday, and employees received 15 days vacation with pay each year. Security was not strict, although employees had to display their passes on entering and leaving the plant and were not permitted free access to buildings other than those in which they worked. The guard unit was composed of ten or twelve men, and one guard armed with a rifle was posted at the entrance gate. The pipes manufactured in the plant were occasionally packed in wooden boxes for shipment but, more often, were simply fastened together with wire and shipped out uncrated. 50X1-HUM

3. Set forth below is the legend for the sketch on page 4:

- (1) One of the main entrances which formed an elevated bridge, on top of which was a building which housed the plant's administrative offices and mess hall.
- (2) Carpentry shop. This was a temporary frame structure which was slated to be torn down.
- (3) A two-story fireproof structure of reinforced concrete and brick with a urallite roof. On the first floor were located showers, lockers and storerooms for tools and equipment; on the second, technical offices, a mess hall, showers and lockers.
- (4) A one-story building of similar construction as (3) above, where metal tubes were worked; it contained four electric smelting furnaces.

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Att. r. [redacted]
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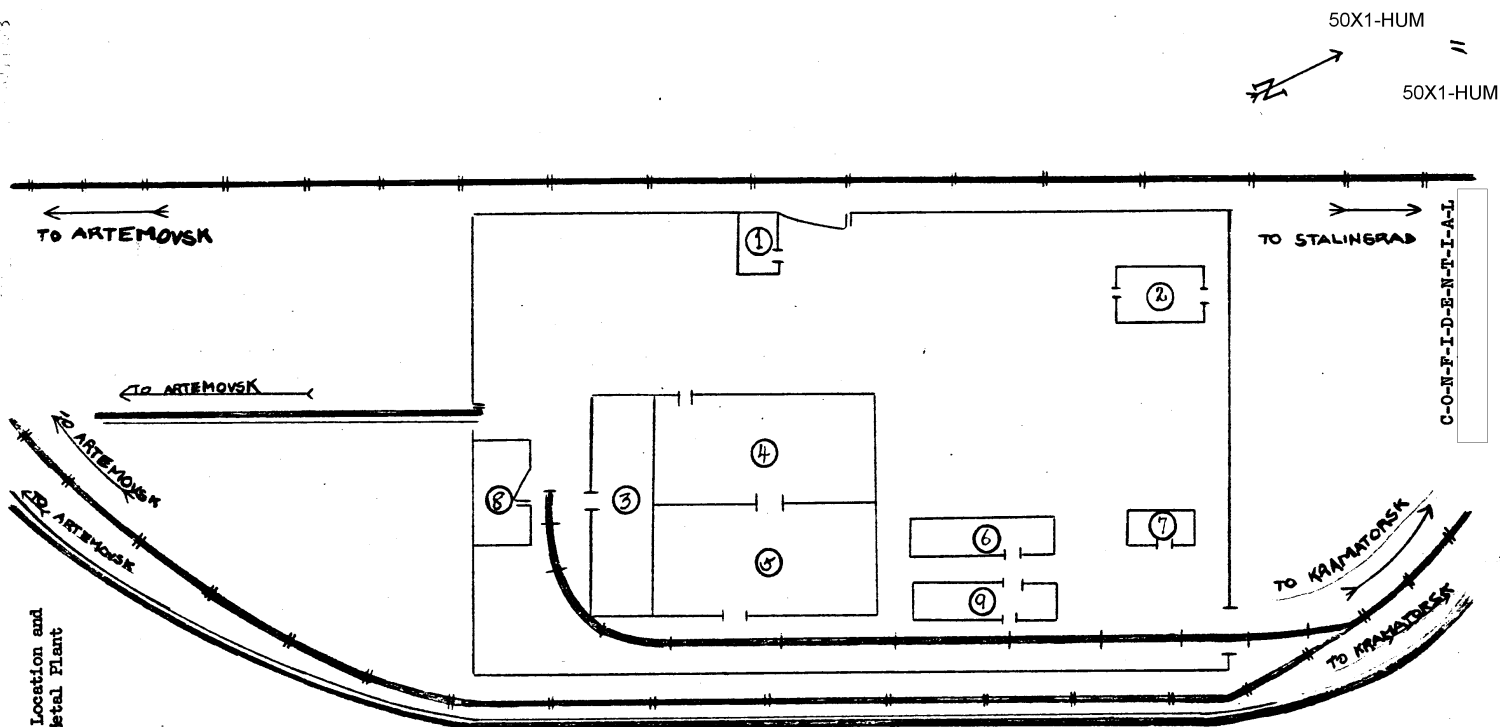
-3-

- (5) Machine shop equipped with lathes and reamers; this was a one story building similar to (3) above.
- (6) Shop where steel girders, used in the construction of the plant, were made.
- (7) Repair shop where trucks and equipment were repaired.
- (8) Garage and quarters for the fire squad.
- (9) Warehouse where cement was stored.

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Sketch Showing Location and Layout of the Metal Plant in Artemovsk

Att. [REDACTED]

BORETS PETROLEUM MACHINERY PRODUCTION PLANT, MOSCOW

1. The Borets Petroleum Machinery Production Plant, Skladochnaya ulitsa, Dzerzhinskiy rayon, Moscow, was subordinate to the Ministry of the Petroleum Industry (Ministerstvo Neftyanoy Promyshlennosti) as stated on a large sign at the plant main entrance gates. The plant employed approximately 2,000 workers who were engaged in the production of pumps, compressors, and other equipment utilized in the Soviet petroleum industry. [REDACTED] 50X1-HUM

2. The production figures, model numbers and dimensions of pumps and compressors, destination of assembled products, and the origin of raw materials were unknown [REDACTED]

Description of Pump Produced at the Borets Plant

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3. [REDACTED] sketch of a pump produced at the Borets Plant in the summer of 1956, in quantities of two or three per month (see sketch No. 1, figures A-E, page 4). In May 1956 this pump which was previously produced with steel or cast iron rotors, was modified by the substitution of fairly resistant but flexible, cream-colored, plastic [plastmassa (sic)] rotors. This liquid or oil pump was about four or five meters long, without the motor housing, between 10 and 12 centimeters in diameter, and contained 174 plastic rotor units. [REDACTED] the pump motor operated at 300-350 RPM, however other characteristics of the motor were unknown. After assembly, the pump was tested in a vertical position in a room-size tank filled with a solution (rastvor (sic)). (See sketch No. 2, page 5, for illustration of pump test.) [REDACTED] 50X1-HUM
[REDACTED] this was done to test the resistance of the plastic rotor blades, [REDACTED] many blades were discarded after the 12-14 hour testing period. The actual purpose and final destination of the assembled units [REDACTED]

4. The following legend identifies numerically designated points on Sketch No. 1, figure A, page 4 :
 - (1) Pump housing, upper part, ordinary steel, weight unknown.
 - (2) Flange sleeve connection.
 - (3) Axle (glavnyy val), 25 millimeters in diameter, highly polished stainless steel with a narrow groove along the length of the shaft for the rotor pin or lock.
 - (4) Brass retention ring for axle.
 - (5) Fluid outlets - two perforated metal rings (front and side views).
 - (6) Axle sleeve between both rings (5).
 - (7) Rotor unit section as illustrated in Figures B,C,D, and E.
 - (8) Net, (setka, (sic)), perforated section of the lower pump housing (19). Both sections of the pump housing, (1) and (19) were threaded, see (20).

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Att: [redacted]

(9) Cast iron motor housing. Length unknown.

(10) Motor.

(11) Felt seal bushing.

(12) Same as (11).

(13) Brass bearing housing.

(14) Ball bearing packing.

(15) Felt ring.

(16) Threaded bronze bushing.

(17) Lower brass retention ring.

(18) Axle-to-motor coupling.

50X1-HUM

(19) Lower pump housing.

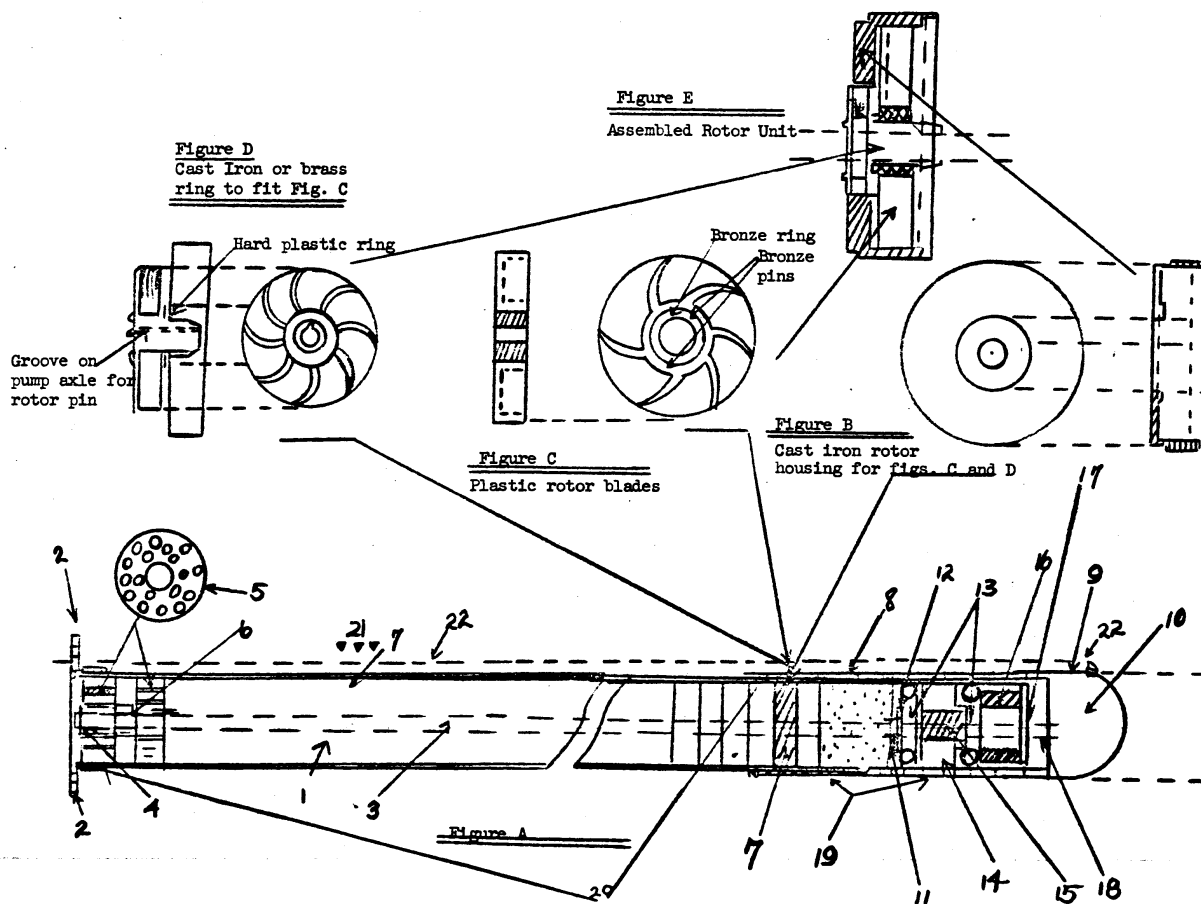
(20) Connecting flange sleeve threads.

(21) [redacted]

(22) Dotted lines illustrate electric cable leading from head to pump to motor. The cable was placed very close to the pump housing.

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C-O N-F-I-D-E-N-T-I-A-L

50X1-HUM

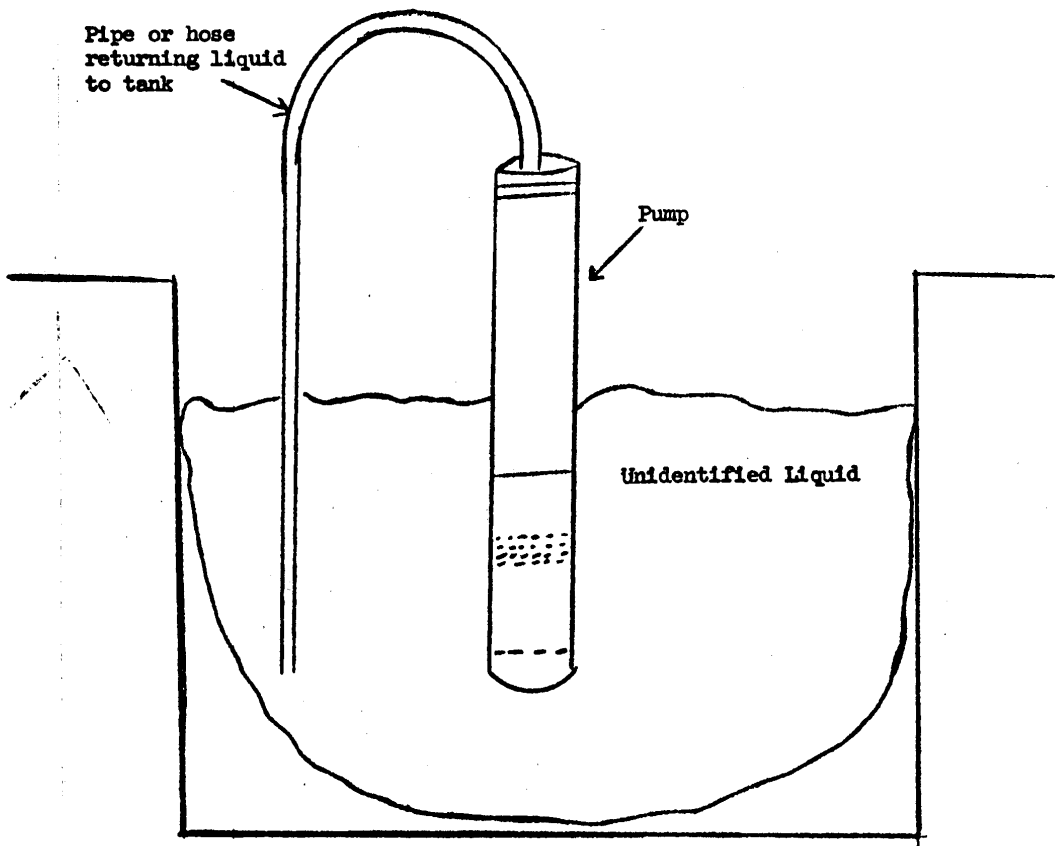
50X1-HUM

50X1-HUM

-5-

Sketch No. 2

Illustration of Testing Tank for Pump
Produced at Borets Plant
(not to scale)



C-O-N-F-I-D-E-N-T-I-A-L

50X1-HUM